

HANDBOOK OF PHONOLOGICAL DATA
FROM A SAMPLE OF THE WORLD'S LANGUAGES

A Report of the Stanford Phonology Archive

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375 02 p-long ⁰¹ 02 32 [p-long-palatalized] 60	19 s-hacek-long ⁰² 43	52 i-long ⁴⁸
375 03 b [b-palatalized] 60	20 c-fricative-long ⁰² 44 (restricted)	53 epsilon [epsilon-voiceless] 49 74 (free) [epsilon-nasalized] 75
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375 05 t-long ⁰¹ 02 [t-long-palatalized] 62	22 n [n-palatalized] 60	55 a ⁰⁶ [a-voiceless] 74 (free) [a-nasalized] 75
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375 07 k ⁰¹ [k-prevelar-palatalized] 60	24 i-trema-nasalized ⁰⁵ 45 46 75 (tag(+), allo) */i-trema/ [m-syllabic] 64 [n-syllabic] 65 [eng-syllabic] 66 [m-palatalized-syllabic] 67 [n-palatalized-syllabic] 68 [eng-prevelar-palatalized-syl- labic] 69	57 i-trema ⁰⁷ *[i-trema-nasalized] [i-trema-voiceless] 74 (free)
375 08 k-long ⁰¹ 02 [k-prevelar-long-palatalized] 60	25 r-flap [l-flap] 70 (free) [r-flap-palatalized] 60	58 i-trema-long ⁰⁷
375 09 g ³³ 63 (restricted, free) */eng/ [g-prevelar-palatalized] 60 63 (allo, free) */eng/	26 h [phi] 71 (free) [f] 71 (free) [h-palatalized] 60 [phi-long] 72 (free) [c-fricative] 04 73 (free) [f-long] 72 (free)	59 o-open ¹⁰ [o-open-voiceless] 74 (free) [o-open-nasalized] 75
375 10 t/s-long ⁰² 34 (restricted)	27 glottal stop ⁴⁷ (limited)	60 o-open-long ¹⁰
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375 15 s-long ⁰² 39		
375 17 z [d/z] 41 (free)		

- 375 \$a Japanese \$b Tokyo Colloquial \$d Altaic \$e Japan \$f 100 million \$g Merritt Ruhlen \$h John Crothers (review)
- 375 \$a Bloch, Bernard \$b 1950 \$c "Studies in Colloquial Japanese IV: Phonemics" \$d Language 26, 86-125 \$e Readings in Linguistics I, ed. by Martin Joos, 329-348 \$g Chicago: University of Chicago Press \$q informants
- 375 \$a Martin, Samuel E. \$b 1952 \$c Morphophonemics of Standard Colloquial Japanese \$d Language 28, Number 3, Part 2 \$f Language Dissertation No. 47 \$g Baltimore: Waverly Press \$q informants
- 375 \$a Jorden, Eleanor Harz \$b 1963 \$c Beginning Japanese, Part I \$f Yale Linguistic Series, No. 5 \$g New Haven: Yale University Press \$q informants
- 375 \$a ACCENT \$A Japanese word accent is manifested by a fall in pitch from a high pitched syllable to a non-high syllable. The sources indicate that the non-high syllables are usually of mid

pitch, but are low-pitched adjacent to pause. (This distinction will be ignored here, since it is predictable, and only high and non-high syllables will be mentioned.) Japanese words are either unaccented or have a single accent, which falls between any two adjacent syllables within the word, or between the last syllable and a following syllable. If the accent follows the first syllable, that syllable is high; otherwise the first syllable is non-high. The second syllable and all following syllables up to the accent are high. All syllables following the accent are non-high. The basic accentual possibilities are thus as follows: (1) Initial accent: high syllable followed by any number of non-high syllables. (2) Non-initial accent: non-high syllable followed by any number of high syllables, followed by any number of non-high syllables. (3) Unaccented: non-high syllable followed by any number of high syllables. It should be noted that if the accent falls after the last syllable of a word, this will differ from the unaccented word pattern only if an unaccented particle follows which can be non-high in pitch, thus manifesting the pitch fall required for accent. In phrase final position words with final accent merge with unaccented words. (See Martin, p.32, also p.17,18.) [JHC]

375 \$a INTONATION \$A According to Martin, "the pitch of the last voiced syllable before a pause is always a morph of intonation." (p.17) He distinguishes four intonation morphs: declarative (low pitch); interrogative (pitch rising from mid to very high), emphatic (very high pitch), and suspensive (mid pitch after very high pitch, low rising after high pitch, otherwise mid or high pitch).

375 \$a MARGINAL SPEECH SOUNDS \$A [s-ingressive] "occurs only as the form of a morpheme meaning 'polite deference' or the like. It is never combined with other phonemes in morphs." (Martin, p.15)

375 \$a REDUPLICATION \$A Entire morphemes may be reduplicated to express intensity or a collective concept. Examples of morphemes up to three syllables long which are reduplicated are given. Several other phenomena seem to resemble reduplication. (See Martin p.65ff.)

375 \$a STRESS \$A "The most striking general feature of Japanese pronunciation is its staccato rhythm. The auditory impression of any phrase is of a rapid pattering succession of more-or-less sharply defined fractions, all of about the same length." (Bloch, p.90-91) "The rhythm of Japanese, unlike that of English, is regular and even: each syllable is given moderate, approximately equal stress, and has approximately equal length. However, some syllables seem more prominent than others. This prominence - or accent - is primarily a matter of pitch in Japanese, and only secondarily a matter of stress." (Jorden, p.xxxiv)

375 \$a SYLLABLE \$A (C)(yod)V(:)

375 \$a THEMATIC ACCENT \$A Some words (including both nouns and verbs) show a predictable accent pattern called thematic accent. In uninflected words this falls on the antepenult; in the imperfect indicative it falls on the penult; the accent remains on this syllable of the stem in most inflected forms. But if the penult of the imperfect indicative is /i-trema-nasalized/ or the second vowel of a morpheme internal sequence, the accent falls on the antepenult. If the penult is a voiceless syllable, the accent is on the last syllable of the imperfect indicative. (Restated from Martin, p.33.)

375 \$a TONE \$A domain of tone: syllable \$A Bloch sets up four pitch phonemes. These represent a merger of two distinct phenomena: phrase intonation patterns and word accent. Precise pitch levels are determined by position of the accent and word boundary, as well as by supplementary intonation patterns. Lexically, however, there are only two "tones," distributed according to one of the accent patterns. (See note on accent.) [JHC]

375 \$a VOICELESS VOWELS (NON-DISTINCTIVE) \$A Vowel devoicing affects primarily the high vowels /i, i-trema/, and only to a lesser extent the other vowels. Jorden reports that "whenever an /i/ or /i-trema/ vowel...occurs between any two voiceless consonants /k, s, t, p, h/, the vowel automatically becomes voiceless or, in some cases, is lost. This happens whether the two consonants come in the same word or in consecutive words.... At the end of an utterance, the vowel either has its full voiced value or is whispered. There is variation depending on the speaker, the occasion, and the word in question." (p.xxxii-xxxiii) Martin writes that "in slow, precise speech, the voiced vowels are heard in nearly every instance, with the possible exception of the final vowel in the polite imperfect indicative forms of verbs and the copula.... In very rapid speech, each of the vowels is sometimes replaced by its unvoiced counterpart or by zero.... When there are sequences of two syllables in which /i/ or /i-trema/ occurs between voiceless consonants, and one of the syllables is accompanied by the accent, the vowel not so accompanied is unvoiced.... With other sequences of potentially voiceless syllables, there is usually some variation, and the first of the sequence is more often unvoiced.... When the vowel occurs between two fricatives, unvoicing is not universal, but usual.... In words of one to four syllables, the vowels /i/ and /i-trema/ after a voiceless consonant are usually unvoiced when final before pause, provided the word includes the accent on one of the preceding syllables." Deletion occurs "particularly when the two surrounding voiceless consonants are the same.... It is especially common with various forms of the polite verb 'masu' and the polite copula 'desu'.... Replacement between /s/ or /s-hacek/ and /t/ is almost universal.... Unvoicing of unaccented mid and low vowels between voiceless consonants varies from individual to individual. When it occurs, the unvoicing is usually of the initial syllable and coincides with the repetition of the same vowel in the following syllable."

(p.13-14)

- 375 01 \$A The voiceless stops are "slightly aspirated." (p.98)
- 375 02 \$A "All long consonants in Japanese are characterized by tenseness." (Jorden, p.xxxi)
- 375 05 \$A /i-trema-nasalized/ is "articulated by raising the tongue toward the roof of the mouth but not making contact anywhere, and at the same time releasing the flow of air through the nasal passage." (Jorden, p.xxxi)
- 375 06 \$A /a/ is "low back, slightly advanced toward central position." (p.91)
- 375 07 \$A /i-trema/ could also be called "u-dot," "i-bar," or even "u," since the degree of backness and rounding is unclear. It is described as "often somewhat advanced toward central position, unrounded or weakly rounded." (p.91)
- 375 10 \$A /o-open/ is "weakly rounded." (p.104)
- 375 11 \$A /w/ is "weakly labialized." (p.103)
- 375 30 \$A Bloch does not distinguish loan and native vocabulary, but examples of /p/ are mostly loans. (p.98) In the Chinese part of the vocabulary /p/ occurs morpheme initially, after [m-long], as an alternant of /h/. In the native Japanese part of the vocabulary /p/ seems especially rare. This is due to the historical shift of /p/ to /h/.
- 375 31 \$A One example of [p-palatalized] is a loan, one is onomatopoeia. (p.98)
- 375 32 \$A Several of the examples are English loans, but there are other words with /p-long/. (p.98)
- 375 33 \$A Bloch (p.109), Martin (p.22) and Jorden (p.xxiii) give different descriptions of the relationship of [eng] to [g]. Historically they derive from a single phoneme, and are to some extent variants of each other in the modern standard language. However, Bloch finds that there are some instances of [g] which never vary with [eng]. Martin indicates that near complementary distribution obtains, [g] word initially, [eng] medially; but a few forms have [g] in medial position.
- 375 34 \$A /t/s-long/ and /t/s-hacek-long/ represent reductions of older /t/ plus /i-trema/ or /i/, respectively. /t/s-hacek-long/ occurs only word-finally and before /t, k, t/s, t/s-hacek/, and these are the only environments where /t-long/, /t/s-long/, and /t/s-hacek-long/ contrast. /t/s-hacek-long/ is not a geminate, like /p-long, t-long, k-long/, which occur in intervocalic position. The geminated equivalent of /t/s-hacek/ is written by Bloch as [t-long-palatalized.t/s-hacek].
- 375 35 \$A /t/s-hacek/, /d/z-hacek/, and /s-hacek/ represent palatalization of older sequences of /t, d, s/ plus /i/ or /yod/. However, due to absorption of the /yod/, the palatoalveolar segments contrast with the dento-alveolars in most environments. Bloch notes one example of [t-palatalized] in free variation with [t/s-hacek]. (p.98) Also, [z-hacek], from older /z.i/, is in the process of merger with /d/z-hacek/, and exists only as a free variant in the standard language described by Bloch. [z-hacek] "in the speech of many persons does not occur at all." (p.101)
- 375 39 \$A /s-long/ occurs both as an intervocalic geminate, and as a reduced version of older /s/ plus vowel before voiceless consonant.
- 375 41 \$A [d/z], which derives from older /d/ before /i-trema/ (cf. /t/ and [t/s]) has fallen together almost entirely with /z/, in the dialect being described, though Bloch notes that [d/z] still occurs as a free variant for a few speakers, just before /i-trema/.
- 375 43 \$A /s-hacek-long/ occurs both as an intervocalic geminate and as reduced version of /s-hacek/ plus vowel before voiceless consonants.
- 375 44 \$A /c-fricative-long/ occurs "before /t, k, t/s, t/s-hacek/." (p.114) /c-fricative-long/ contrasts with [phi-long] in these environments. (p.110) This contrast is due to reduction of older syllables /h.i/ and /h.i-trema/ to long fricatives.
- 375 45 \$A It is not clear that there is any phonetic difference between the syllabic nasal in its vocalic form, [i-trema-nasalized], and the nasalized variant of /i-trema/.
- 375 46 \$A /i-trema-nasalized/ occurs before vowels, /s, h, yod, w/, and word boundary.
- 375 47 \$A "The distribution of /glottal stop/ is unique in type: it occurs only before pause, and only in a few expressions (mostly interjectional)." (p.99) "/glottal stop/ is in complementary distribution with all the other stops." (p.107) "/glottal stop/ is sometimes heard initially before a vowel in interjections and emphatic speech.... [It] also represents the glottal constriction associated with vowel rearticulation, which sometimes appears in slow speech between vowels belonging to different morphs.... In more rapid speech, the rearticulation

disappears." (Martin, p.13)

- 375 48 \$A /i-long, a-long/ are rare morpheme internally. (Martin, p.13)
- 375 49 \$A "No instances of [epsilon-voiceless] have been observed, but the sound type may nevertheless occur in the dialect, perhaps with a distribution similar to that of [a-voiceless]." (Bloch, p.103) However, both Jordan and Martin list [epsilon-voiceless] as occurring in some environments.
- 375 50 \$A /w/ occurs only before /a/. (Martin, p.21)
- 375 51 \$A While nearly every syllable is lexically either /high/ or /mid/ tone, these are distributed in words so as to form a pitch accent system. (See notes on stress, accent, and tone.)
- 375 60 \$A /p, p-long, b, k, k-long, g, m, n, eng, r-flap, h/ are palatalized "before /i, yod/." (p.114) In this process, the velars become prevelar.
- 375 61 \$A /t/ is realized as [t/s] before /i-trema/. (p.99)
- 375 62 \$A /t-long/ is palatalized before /t/s-hacek/. Two of Bloch's three examples are English loans. (p.98)
- 375 63 \$A /g/ is a free variant of /eng/, [g-prevelar-palatalized] is a free variant of [eng-prevelar-palatalized].
- 375 64 \$A /i-trema-nasalized/ is realized as [m-syllabic] before /p, b, m/. (p.114)
- 375 65 \$A /i-trema-nasalized/ is realized as [n-syllabic] before /t, t/s, s, d, z, r-flap, n/. It is in free variation with /eng-syllabic/ before /epsilon, a, o-open, i-trema/ and /h/ not followed by /i, yod/. (p.114)
- 375 66 \$A /i-trema-nasalized/ is realized as [eng-syllabic] before velar consonants. (Martin, p.13) According to Bloch (p.102) this is also a free variant of /i-trema-nasalized/ before vowels.
- 375 67 \$A /i-trema-nasalized/ is realized as [m-palatalized-syllabic] before /p.i, p.yod, b.i, b.yod, m.i, m.yod/. (p.114)
- 375 68 \$A /i-trema-nasalized/ is realized as [n-palatalized-syllabic] before /t/s-hacek, s-hacek, d/z-hacek, r-flap.i, r-flap.yod, n.i, n.yod/. (p.114)
- 375 69 \$A /i-trema-nasalized/ is realized as [eng-prevelar-palatalized-syllabic] before /x, k.i, k.yod, g.i, g.yod, eng.i, eng.yod/. Occurs in free variation with [n-palatalized-syllabic] before /i, yod, h.i, h.yod/ and word finally when preceded by /i/. (p.114)
- 375 70 \$A [l-flap] occurs in free variation with [r-flap] before /epsilon, o-open/. (p.114)
- 375 71 \$A /h/ is in free variation with [phi] and [f] before /i-trema/. (p.91, 114)
- 375 72 \$A /h/ is realized as [phi-long] or [f-long] before /t, k, t/s, t/s-hacek, h/. (p.91, 114)
- 375 73 \$A [c-fricative] occurs in free variation with [h.yod] or with [h] before [i]. (p.100)
- 375 74 \$A Short vowels tend to be voiceless between voiceless consonants. (See note on voiceless vowels.)
- 375 75 \$A Short vowels are nasalized "before or after /i-trema-nasalized/." (p.113)
- 375 76 \$A /yod/ is voiceless "after /p, k/ and before /a, o-open, i-trema/." (p.115)
- 375 77 \$A [mid] tone is [low] adjacent to phrase boundary.